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SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1954

No. 11 Original

STATE OF MISSISSIPPI,

Plaintiff,

vs.

STATE OF LOUISIANA

Defendant.

REPORT OF SPECIAL MASTER

D. K. McKAMY,
Special Master.

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REPORT OF SPECIAL MASTER

To the Honorable Chief Justice and Associate Justices of The Supreme Court of the United States of America:

In the above-entitled cause this Honorable Court appointed me as special master by its order dated October 26, 1953, as follows:

> "No. 11, Original. STATE OF MISSISSIPPI, *Plaintiff*, v. STATE OF LOUISIANA.
>
> "October 26, 1953. It is ordered that D. K. McKamy, Esquire, of Birmingham, Alabama, be, and he is hereby, appointed special master in this cause, with authority to summon witnesses, issue subpoenas, and take such evidence as may be introduced and such as he may deem it necessary to call for. The master is directed to find the facts specially and state separately his conclusions of law thereon, and to submit the same to this Court with all convenient speed, together with a draft of the decree recommended by him. The findings, conclusions,

and recommended decree of the master shall be subject to consideration, revision, or approval by the Court. The master shall be allowed his actual expenses and a reasonable compensation for his services to be fixed hereafter by the Court. The allowances to him, the compensation paid to his stenographic and clerical assistants, and the cost of printing his report shall be charged against and be borne by the parties in such proportion as the Court hereafter may direct. If the appointment herein made of a master is not accepted, or if the place becomes vacant during the recess of the Court, the Chief Justice shall have authority to make a new designation which shall have the same effect as if originally made by the Court herein."

(346 U. S. 862, 98 L. Ed. 60, 74 S. Ct. 102.)

In pursuance of said order, I met counsel for both States in the City of New Orleans, Louisiana, on the 24th day of November, 1953, at which time certain procedures were agreed upon. A second meeting with counsel was held at Vicksburg, Mississippi, on February 2, 1954, at which meeting certain stipulations were entered into and the matter set for hearing of evidence on March 15, 1954. A third conference was held at Birmingham, Alabama, on February 26, 1954, and upon request of attorneys for the State of Louisiana and by agreement of attorneys for the State of Mississippi, the time for beginning testimony was postponed until July 12, 1954, and the place fixed at Vicksburg, Mississippi. A fourth conference with the attorneys was held at Vicksburg, Mississippi, on June 12, 1954, at which time the State of Louisiana entered into the record certain stipulations concerning a portion of the property situated in the Diamond Island portion of the territory in controversy. A further conference was held at Birmingham Alabama, on

July 6, 1954, at which conference additional stipulations were made into the record concerning the Diamond Point area.

On July 12, 1954, at Vicksburg, Mississippi, the hearing was begun for the taking of testimony and continued to and including the 29th day of July, 1954. One day of this period was spent in inspecting the Oak Bend area of the territory in dispute. The taking of oral testimony was closed on July 29, 1954. Leave was granted to the attorneys for the State of Mississippi to file briefs by the 12th day of September, 1954, and to the attorneys for the State of Louisiana to file briefs by the 1st day of October, 1954, and for an oral argument to be heard at a time and place agreed upon after this Court had ruled upon the petition for intervention filed by Eleanor R. Woolgar and Erma L. Richards. The petition was denied on October 14, 1954. 75 S. Ct. 23. Application for rehearing was denied November 22, 1954.

On November 2, 1954, I inspected the territory in the Diamond Island-Diamond Island Towhead area. Oral arguments were made by attorneys for both States at Vicksburg on November 12, 1954. The proof consisted of a large number of exhibits and the oral testimony of fourteen witnesses. The exhibits which were filed as a part of the proof, are numerous and run into a large number of pages. The record of the oral testimony, the exhibits, and the briefs filed in the cause by attorneys for the State of Mississippi and the State of Louisiana have been filed with the Clerk of this Court.

NOW, THEREFORE, In pursuance of the above order of this Court, I herewith submit to the Court my findings of fact, conclusions of law, and recommendations for a decree.

Respectfully submitted,

D. K. McKAMY,
Special Master.

Report of Special Master Together With His Findings of Fact and Conclusions of Law

This is an original action brought by the State of Mississippi against the State of Louisiana for the purpose of having this Court determine the true boundary between the two states at certain points on the Mississippi River, approximately 16 miles below Vicksburg, Mississippi, in the area known as Diamond Island and Diamond Island Towhead and in the area known as Diamond Point. The case involves approximately 25,000 acres of land.

I

Jurisdiction

The jurisdiction of the Court is clear. This is conferred by Article 3, Section 2 of the Constitution, and by Section 1251, Title 28 U. S. C. A.

II

Pleadings

The State of Mississippi brought this suit against the State of Louisiana seeking a decree to determine the true boundary between the states at certain points and confirming the jurisdiction and sovereignty of the State of Mississippi over the described territory.

The State of Louisiana first objected to the filing of the bill of complaint on the basis that there was no dispute between the states as to the boundary. This Court on June 17, 1953, entered an order requiring the State of Louisiana to answer. The State of Louisiana then answered, denying the claims of Mississippi as to jurisdiction over the territory described and asserting, by cross bill, its jurisdicton and sovereignty over the territory in question, and, in addition, set up the claim that it had exercised undisputed possession of the territory for more than half a century, and by adverse

possession and acquiescence of the State of Mississippi it had acquired jurisdiction and sovereignty over such territory. The State of Mississippi filed a reply or replication in which it denied the claims of the State of Louisiana and asserted affirmatively that by adverse possession and acquiescence of the State of Louisiana, for more than half a century, it had acquired jurisdiction and sovereignty over such territory.

This cause has come on to be heard and for determination upon (a) the original bill of complaint of the State of Mississippi, (b) the answer of the State of Louisiana, (c) the reply or replication of the State of Mississippi, and (d) oral and documentary evidence presented at the hearing of this cause before me as the Special Master appointed by this Court to take evidence and to submit to this Court findings of fact, conclusions of law, and recommendations for a final decree.

Since in my findings of fact reference is made to decisions of this Court, I will first state my conclusions of law.

III

Conclusions of Law

Certain principles of law concerning boundaries between states which are based upon navigable rivers are set forth in the decisions of this Court. The following are my conclusions of law based upon these decisions:

1. When a navigable river forms the boundary separating one state from another, in the absence of a special convention between the states, or long use equivalent thereto, the thalweg or middle of the main navigable channel is to be taken as the true boundary line.

Iowa v. *Illinois*, 147 U. S. 1, 13 S. Ct. 239, 37 L. Ed. 55; *Arkansas* v. *Tennessee*, 246 U. S. 158, 38 S. Ct. 301, 62 L. Ed. 638;

Louisiana v. *Mississippi*, 202 U.S. 1, 26 S. Ct. 408, 50 L. Ed. 913;

New Jersey v. *Delaware*, 291 U.S. 361, 54 S. Ct. 407, 78 L. Ed. 847.

2. The thalweg is defined as meaning the middle of the main navigable channel, the track taken by boats in their course down the stream, which is that of the strongest current.

New Jersey v. *Delaware*, 291 U.S. 361, 54 S. Ct. 407, 78 L. Ed. 847;

Iowa v. *Illinois*, 147 U.S. 1, 13 S. Ct. 239, 37 L. Ed. 55;

Louisiana v. *Mississippi*, 202 U.S. 1, 26 S. Ct. 408, 50 L. Ed. 913;

Arkansas v. *Mississippi*, 250 U.S. 39, 39 S. Ct. 422, 63 L. Ed. 832;

Arkansas v. *Tennessee*, 269 U.S. 152, 46 S. Ct. 31, 70 L. Ed. 206.

3. Where the course of the boundary stream changes through the operation of the natural and gradual process of erosion and accretion, the boundary follows the stream and remains the varying center of the channel.

New Orleans v. *United States*, 10 Peters 662;

Nebraska v. *Iowa*, 143 U.S. 359, 12 S. Ct. 396, 36 L. Ed. 186;

Missouri v. *Nebraska*, 196 U.S. 23, 25 Ct. 155, 49 L. Ed. 372;

Arkansas v. *Tennessee*, 246 U.S. 158, 38 S. Ct. 301, 62 L. Ed. 638.

4. When, however, from any cause, natural or artificial, a boundary river suddenly leaves its old channel and seeks a new bed, this sudden and rapid change is termed an

avulsion and the resulting change works no change of boundary, which remains in the middle of the old channel, although no water may be flowing in it, and irrespective of subsequent changes in the new channel.

New Orleans v. *United States*, 10 Peters 662;
Jeffries v. *East Omaha Land Co.*, 134 U.S. 178;
Nebraska v. *Iowa*, 143 U.S. 359, 12 S. Ct. 396, 36 L. Ed. 186;
Missouri v. *Nebraska*, 196 U.S. 23, 25 S. Ct. 155, 49 L. Ed. 372;
Arkansas v. *Tennessee*, 246 U.S. 158, 38 S. Ct. 301, 62 L. Ed. 638;
Louisiana v. *Mississippi*, 282 U.S. 458, 51 S. Ct. 197, 75 L. Ed. 459.

5. In case of an avulsion, so long as the old channel remains a running stream, the boundary marked by it is still subject to be changed by erosion and accretion; but when the water becomes stagnant, the effect of these processes is at an end; the boundary then becomes fixed in the middle of the channel (as defined by the Supreme Court) and the gradual filling up of the bed that ensues is not to be treated as an accretion to the shores but as an ultimate effect of the avulsion. The emergence of the land, however, may or may not follow, and it ought not in reason to have any controlling effect upon the location of the boundary line in the old channel.

Arkansas v. *Tennessee*, 246 U.S. 158, 38 S. Ct. 301, 62 L. Ed. 638.

6. The principle of prescription and acquiescence in determining the boundary between states has been sustained and has received repeated recognition by the Supreme Court.

Arkansas v. *Tennessee*, 310 U.S. 563, 60 S. Ct. 1026, 84 L. Ed. 1362;

Rhode Island v. *Massachusetts*, 4 Howard 591, 11 L. Ed. 1116;

Louisiana v. *Mississippi*, 202 U.S. 1, 26 S. Ct. 408, 50 L. Ed. 913;

Virginia v. *Tennessee*, 148 U.S. 503, 13 S. Ct. 728, 37 L. Ed. 537;

Maryland v. *West Virginia*, 217 U.S. 1, 30 S. Ct. 268, 54 L. Ed. 645;

Vermont v. *New Hampshire*, 289 U.S. 593, 53 S. Ct. 708, 77 L. Ed. 1392;

Michigan v. *Wisconsin*, 270 U.S. 295, 46 S. Ct. 290, 70 L. Ed. 595.

7. Where an island is formed in a navigable stream which is the boundary between states, the island belongs to the state situated on the side of the thalweg on which the island is formed.

Kansas v. *Missouri*, 322 U.S. 213, 64 S. Ct. 975, 88 L. Ed. 1234;

City of St. Louis v. *Rutz*, 138 U.S. 226, 34 L. Ed. 911.

8. If an island grows by the addition of alluvion till it reaches the mainland, such new made land will not become the property of the shore owner, but belongs to the owner of the island.

Arkansas v. *Tennessee*, 310 U.S. 563, 60 S. Ct. 1026, 84 L. Ed. 1362.

9. The degree of proof to fix a boundary between states where a channel of river forming the boundary is abandoned is such certainty as is reasonable as a practical matter, having regard to the circumstances.

Arkansas v. *Tennessee*, 269 U.S. 152, 46 S. Ct. 31, 70 L. Ed. 206.

10. Burden of proof is on the State of Mississippi, as the complainant.

Kansas v. *Missouri*, 322 U.S. 213, 88 L. Ed. 1234, 64 S. Ct. 975.

The above conclusions of law were not disputed by the attorneys for either the state of Louisiana or the State of Mississippi in either the oral arguments or in the briefs filed.—

However, there is difference of opinion as to the application of these principles of law to the facts of the case and there is wide difference of opinion as to the proper interpretation of conclusion numbered five. This is a quotation from the opinion in the case of *Arkansas* v. *Tennessee*, 246 U.S. 158, 38 S. Ct. 301, 62 L. Ed. 638.

Attorneys for the State of Louisiana contend that under this decision the boundary does not become fixed after an avulsion until there is no "effective flow" in the old channel. By "effective flow" they mean that if, at any stage of the river from extreme low to high flood, any water flows in the old channel in sufficient amount and force to cause erosion or accretions in the old channel, then the boundary has not become fixed. Under this contention, the boundary is still subject to change in the old channel during periods of extreme flood if any erosion is caused in that channel or any accretions are added.

Attorneys for the State of Mississippi, on the other hand, contend that the quoted language from the opinion of the Supreme Court means that when the old channel has become so filled as no longer to be navigable and certainly when at mean low water no water can enter the old channel, the boundary then becomes fixed in the middle of the old channel and is not altered by later flood waters which may enter the old channel.

I cannot agree with the interpretation placed upon the decision by the attorneys for Louisiana.

I believe that when the old channel has so far deteriorated and become so filled by deposition as that it can no longer be used for navigation except in times of flood, it no longer has a thalweg. When the filling has proceeded to the point that no water can enter the channel at low stages of the river, which are normal during certain periods of the year, there is then no current in the old channel and the water has become stagnant.

When this occurs (while at the same time the river itself remains a wide, deep, swiftly flowing stream capable of navigation at all stages), the old channel is no longer a part of the main river, even though water may flow during a part of the year in the old channel during periods of high water. The old channel is then no more a part of the river than the thousands of sloughs and swales found all up and down the Mississippi River which act as channels to carry flood waters from the river during high stages.

In the case of *Handly's Lessee* v. *Anthony et al.* 5 Wheaton 374, 5 L. Ed. 113, Chief Justice Marshall wrote the opinion.

This was ejectment suit to recover land which the plaintiff claimed under a grant from the State of Kentucky, and which the defendants held under a grant from the United States, as being part of Indiana.

It appears from the recital of facts that the Ohio River after running in a southerly direction for a considerable distance, turned to the north until it approached within less than three miles of the place where the southern course commenced. A short distance above the narrowest part of the neck of land thus formed, a channel, called a bayou, makes out of the Ohio and enters the same river a short distance below the place where it resumes its westward course. This channel is about nine miles by its meanders,

three and a half miles in a straight line, and from four to five poles wide. About midway of this channel two branches empty into it from the northwest one runs along it at low water eastward and the other westward. Between them is ground over which waters of the Ohio do not pass until the river has risen about 10 feet above its lowest stage. It rises from 40 to 50 feet and all of the testimony shows that this channel is made by the waters of the river, not of the creeks which empty into it.

On this state of facts the Court said:

> "If instead of an annual and somewhat irregular rising and falling of the river, it was a daily and almost regular ebbing and flowing of the tide, it would not be doubted that a country bounded by the river would extend to low water mark. This rule has been established by the common consent of mankind. It is founded on common convenience. Even when a state retains its dominion over a river which constitutes the boundary between itself and another state, it would be extremely inconvenient to extend its dominion over the land on the other side, which was left bare by the receding of the water. And this inconvenience is not less where the rising and falling is annual, than where it is diurnal. *Wherever the river is a boundary between states, it is the main, the permanent river, which constitutes that boundary;* and the mind will find itself embarrassed with insurmountable difficulty in attempting to draw any other line than the low water mark." (Emphasis supplied.)

In the case of *State of Iowa v. State of Illinois*, 147 U.S. 1, 37 L. Ed. 55, this Court held that the boundary between states is fixed by the rule of the thalweg, that is the middle of the main navigable channel. The Court quotes with ap-

proval from the case of *Battenuth v. St. Louis Bridge Co.*, 123 Ill. 535, 17 N.W. 439, where it is said:

> "The law as stated by law writers, and in the adjudged cases, seems to be that where a river is declared to be the boundary between states, although it may change imperceptibly from natural causes, the river 'as it runs continues to be the boundary': But if the river should suddenly change its course, or desert the original channel, the rule of law is, the boundary remains in the middle of the deserted river bed. Where a river is the boundary between states, as is the Mississippi between Illinois and Missouri, it is the main, the permanent, river which constitutes the boundary, and not that part which flows in seasons of high water, and is dry at other times. Handly's Lessee v. Anthony, 5 Wheaton 374. In no other way would a river be a permanent fixed boundary, at all times readily ascertainable. There are many cogent reasons why the boundary lines between states should be permanent. Otherwise, territory in one state at one time, sooner or later, might be in another state. It must be in one state all the time, or else the state would lose jurisdiction over it."

It is a well-known fact that at certain times the Mississippi River, as well as other rivers, overflows its banks and spreads over many miles of territory. At such times boats may pass over a wide expanse of territory which is normally dry land. There may be a swift current over such territory, it may destroy houses, uproot trees, wash away quantities of soil, deposit clay, sand and other deposition over wide territories, and yet it cannot well be contended that this territory is thereby made a part of the river and state boundaries changed by such floods.

The facts in the case of *Arkansas* v. *Tennessee*, 246 U.S. 158, 38 S. Ct. 301, 62 L. Ed. 638, are recited in the opinion and in the cases of *Stockley* v. *Cissna*, 119 F. 812; *State* v. *Muncie Pulp Co.*, 119 Tenn. 47; *Stockley* v. *Cissna*, 119 Tenn. 135.

These opinions show that in times of high water the old channel was filled with water over which boats could and did pass. These facts did not affect the decision of this court. It was held that the boundary had become fixed when the water became stagnant at lower stages of the river.

IV

Findings of Fact

There are two distinct tracts of land involved in this case. (1) Diamond Island or Diamond Island Towhead (the terms are used interchangeably throughout the testimony), and this tract will be discussed under Part A of this portion of the report. (2) Diamond Point, which will be discussed under Part B.

Before discussing the testimony and making findings of fact as to these tracts of land, there are certain facts which affect both tracts and are undisputed.

Undisputed Facts

The State of Louisiana was admitted into the Union of the United States of America by Act of Congress, Chapter 50, United States Stat. at Large, Vol. 2, Page 701, approved April 8, 1812, and its boundaries were described in the preamble as follows:

> "Beginning at the mouth of the river Sabine; thence by a line drawn along the middle of said river, including all islands to the 32nd degree of latitude; thence north to the northernmost part of the 33rd degree of

north latitude; thence along said parallel of latitudes to the River Mississippi; thence down said river to the River Iberville; and from thence along the middle of said river to Lakes Maurepas and Pontchartrain to the Gulf of Mexico; thence bounded by said Gulf to the place of beginning * * * etc.

By Act of Congress, Chapter 57, United States Statutes at Large, Vol. 2, Page 708, approved April 14, 1812, additional territory was added to Louisiana, south of the 31st degree of north latitude which is south of the area involved in this suit and is in newise involved here.

The State of Mississippi was admitted into the Union of the United States of America by an Act of Congress, Chapter 23 of the United States Statutes at Large, Vol. 3, Page 348, approved March 1, 1817. The resolution accepting the State of Mississippi into the Union was approved December 10, 1817, Vol. 3, Pages 472-3, United States Statutes at Large, and the boundaries of the State of Mississippi were described therein as follows:

> "Beginning on the River Mississippi, at the point where the southern boundary line of the State of Tennessee strikes the same, thence east along the said boundary line to the Tennessee River; thence by a direct line to the northwest corner of the County of Washington; thence due south to the Gulf of Mexico, thence westwardly including all the islands within six leagues of the shore, to the most eastern junction of Pearl River with Lake Borgne, thence up said river to the 31st degree of north latitude, thence west along said degree of latitude to the Mississippi River, thence up the same to the beginning."

Warren County, State of Mississippi, and Madison Parish, State of Louisiana, are on the Mississippi River between the 33rd and 31st degrees of north latitude.

Thus when the two states were respectively admitted to the Union, the thread of the Mississippi River formed the eastern boundary of Louisiana and the western boundary of Mississippi. Changes in the course of the Mississippi River in the vicinity involved in this litigation have occurred since said states were admitted to the Union and as a result of such changes the land areas known respectively as Diamond Island and Diamond Island Towhead (the terms are used interchangeably throughout the testimony and in this report) and accretions thereto and Diamond Point and accretions thereto have been formed.

A dispute exists between the two sovereign states as a result of such changes in the course of the Mississippi River as to the location of the boundary between said states in the vicinity and area involved in this litigation.

PART A

Pertaining to Diamond Island Towhead Area

The State of Louisiana entered into the record the following stipulation:

> "It is admitted by the State of Louisiana that subsequent to the entry of the States of Louisiana and Mississippi into the Union, a point bar developed from the Mississippi shore, moved in a north and westerly direction from its original position, forming a point bar. That subsiquently a portion, or the tip, of that point bar was cut off and now the remnant of the portion, or tip, remains on the western side of the present channel of the Mississippi River, and that a portion, or a piece, of land on the western side in the vicinity of what is known as Diamond Island Towhead is a part of the State of Mississippi."

Louisiana thus admitted that the entire area known as Diamond Island or Diamond Island Towhead was at one

time a part of the State of Mississippi and that a part thereof described only as "the remnant of the portion, or tip," remains on the western side of the present channel of the Mississippi River and is a part of the State of Mississippi."

The evidence introduced fully justifies the action of the attorneys for Louisiana in making this stipulation. The undisputed evidence showed that opposite the original mainland of Warren County, Mississippi, the land on the right or Louisiana bank of the Mississippi River at Diamond Point was eroded by action of the river over a long period of years and caved into the Mississippi River and disappeared.

Contemporaneously a point bar (Diamond Point Bar) was formed and built by accretions to the Mississippi shore in a northerly and westerly direction until it extended over the entire territory known as Diamond Island or Diamond Island Towhead.

As the Mississippi shore was thus extended by accretions, the thalweg or main navigable channel of the Mississippi River also moved in a northerly and westerly direction; and as the thread of said channel thus moved, the boundary line between the States of Louisiana and Mississippi was also moved in a northerly and westerly direction, remaining at all times at the thread of said channel around Diamond Point Bar to the north, west and south.

Diamond Point Bar continued its progress until about 1864-1866 when the Mississippi River by avulsion cut across the northwestern end of Diamond Point Bar and formed a chute cutoff and thus left the northwestern end of the Bar as an island called Diamond Island or Diamond Island Towhead; but the remainder of Diamond Point Bar remained attached to the mainland of Mississippi.

The approximate date of the formation of the chute cutoff is fixed by the fact that Lloyd's map of 1862, General

U.S. Grant's map of 1863, and Admiral Porter's map of 1864 did not show a chute cutoff, while an official map of the State of Louisiana made in 1866 by Captain J. A. Porter showed that the chute cutoff had been formed (Louisiana Exhibit No. 19 and Complainant's Exhibits 7a and 7b).

The position of the river and its navigable channel before and at the time of the chute cutoff was reconstructed by Dr. H. N. Fisk, a witness for the complainant, and diagramed as his Course "A" upon Plates 4, 5, and 10 of Complainant's Exhibit 4 to Dr. Fisk's testimony. The accuracy of this reconstructed course is attested by the fact that it is for all practical purposes confirmed by Map No. 26 attached to the report of a Reconnaissance Survey of the Mississippi River made by Major Suter, which will be discussed later in this report. I find that the said Reconstructed Course "A" represents the approximate position of the Mississippi River at the time of the formation of the chute cutoff.

The chute cutoff was formed suddenly during a period of high waters and was accordingly an avulsion. The cause and method of its formation is well described by Dr. H. N. Fisk, a witness for complainant (see p. 70 of transcript), and by Mr. Clarence Durham, a witness for defendant (see pp. 888 and 1129 of the transcript), and by Mr. Welder, a witness for defendant (see p. 1301 of transcript).

When the chute cutoff was formed the flow of the river was divided. The main channel of the river continued for a period to flow around to the north and west of Diamond Island, but a part of the flow of the river was directed through the newly formed chute. This chute was entirely within the territorial limits of the State of Mississippi since it had been formed by cutting through the accretions forming Diamond Point Bar, leaving Diamond Island in Mississippi situated on the right bank of the part of the river flowing through the chute and the remaining part of

Diamond Point Bar, still attached to the mainland of Mississippi, on the left bank of the river.

Up to this point the testimony is practically without dispute and it is further without dispute that the chute cutoff later widened and developed until the major portion of the River was diverted into it from the former main channel and that this former main channel to the north and west of Diamond Island was finally closed and abandoned by the River.

The time and method of the final abandonment of this former main channel and what took place thereafter in the chute channel and in the portion of the Diamond Point Bar left after the formation of the Island is in sharp dispute.

The State of Louisiana claims all of the land mass extending from the northeast portion of Bedford Bar (which bar was on the right or Louisiana bank of the Mississippi River prior to the avulsion forming the chute cutoff and is admittedly still in Louisiana), southwardly and eastwardly in front of Diamond Island proper (which was in Mississippi on the left bank of the River prior to the avulsion and which is now on the right bank of the River and admittedly in Mississippi), and westwardly past Diamond Island to a point in the thalweg of the Oak bend channel just north of and directly across from the westernmost tip of Diamond Point. In other words, Louisiana claims all of Diamond Island-Diamond Island Towhead area except the remnant of the island proper. This territory is depicted on various charts of the Mississippi River Commission such as Charts 49 (Smith No. 2, Louisiana No. 16, Fisk No. 5) and 51 (Smith No. 3a, Louisiana No. 27, Fisk No. 7), and Hydrographic Survey 1937-38, U. S. Engineer's Office (Smith No. 4, Louisiana No. 33), Yokena Quadrangle Map of War Department Corps of Engineers (Fisk No. 8, Smith No. 1, Louisiana No. 18a).

The basis for this claim by Louisiana is that after the chute cutoff was formed the River migrated southwardly and westwardly and over a period of more than 80 years eroded all of the land mass in this territory and replaced it with accretions which Louisiana claims were formed to Bedford Bar in Louisiana and claims that none of such accretions were formed to Diamond Island proper or to any territory of the State of Mississippi. This theory is illustrated particularly by Plates 8a, 10 and 11a, Louisiana Exhibit No. 2.

Mississippi admits, and the testimony clearly shows, that all of this territory was eroded by the River over a long period of years as it migrated southwardly and westwardly; but Mississippi claims, and presented evidence to back up its claim, that much of the accretion was formed to Mississippi territory and not to Bedford Bar. Mississippi asserts that the boundary between the states in this territory should be fixed along a line drawn at right angles to the various thalwegs of the river as it migrated southwardly and westwardly, beginning at the point where the flow of the river was divided at the time of the formation of the chute cutoff.

The question then to be decided as to this part of the case is what part, if any, of the accretions which replaced the land mass which was eroded and destroyed by the migrating river after the formation of the chute cutoff were accretions added to the territory of the State of Mississippi.

Since there were no living eye-witnesses who could testify as to the conditions created by the migrating river during this long period of 89 or more years, it is necessary to rely upon maps, charts, aerial photographs, and the testimony of experts who have reconstructed the conditions at various times during that period, based upon their examination of the terrain, their interpretation of accretion scars, and their expert knowledge and experience concerning the Mississippi River.

In support of its position the State of Mississippi, among other witnesses, presented two witnesses as experts, Dr. H. N. Fisk and Mr. Austin B. Smith.

Dr. H. N. Fisk is forty-six years of age. He is at present chief of the Geologic Research Section, Humble Oil and Refining Company, with headquarters at Houston, Texas.

He graduated from the University of Oregon with a bachelor's degree in 1930 and a master's degree in 1931. He received a Ph.D. degree in 1935 from the University of Cincinnati, and served as assistant graduate instructor in geology at the University of Oregon, the University of Cincinnati, and Northwestern University prior to going on the faculty of Louisiana State University in 1935 as an instructor in geology and mineralogy. He left Louisiana State University in 1948 and at that time held the title of Professor of Geology.

He was employed in 1941 by the Mississippi River Commission as expert consultant and retained that position until 1948, and since that time until the present he has been engaged in consulting work for the Mississippi River Commission. His title with the Mississippi River Commission from 1941 to 1948 was that of Consulting Geologist.

At the present time he occupies a position with the Mississippi River Commission [redacted] Board of Consulting Engineers for the Old River Project.

He is a member of various geological societies and served as president of the Society of Economic Paleontologists and Mineralogists in the year 1953.

While engaged as consultant for the Mississippi River Commission it was part of his duties to make a comprehensive geological investigation of the entire alluvial valley of the lower Mississippi River for the purpose of ascertaining from the geological record the factors which were controlling Mississippi River activities. He had working with

him on that project several competent geologists, and in 1944 the Mississippi River Commission published the result of this first work. It was called "A Geological Investigation of the Alluvial Valley of the Lower Mississippi River." In this study an attempt was made, with as complete a record as possible, to show the history of the river and the stages of development of the alluvial valley. This publication was introduced into evidence and marked Exhibit Fisk No. 1.

He is also the author of numerous articles and publications concerning the Mississippi River.

Dr. Fisk was employed in 1944 to make a particularized study of the area involved in this suit in connection with other litigation then pending in the state courts of Mississippi, a report of which is contained in the decision of the Supreme Court of Mississippi in *Sharp & Strickler v. Learned*, 32 Co. 2d 141.

In the present case a copy of the written report made by Dr. Fisk in the state court case was introduced into evidence including a series of pictures and charts which accompanied the report. It is identified as Complainant's Exhibit No. 4 to the testimony of Dr. Fisk. The charts were numbered 1 to 11 inclusive.

Chart No. 1 is an aerial mosaic photograph of the Diamond Island Towhead area made in 1940 which was used as a base map for the charts. On Plate No. 2 he mapped certain traverses and noted the points at which certain photographs included in the report were taken, and placed on the plate the lines of accretions and accretion features found by him on the ground and shown on the aerial photographs.

On Plate 3 are placed the elevations of the land surface from surveys by U. S. Engineers. Also shown are such features as lowlands, lakes, escarpments, gravel deposits, sloughs, etc.

On Plate 4 are shown the mapped river courses. Shown in red is the 1820-30 course; in blue, the 1765 course; in green, the 1882-83 course; in orange, the 1895 course; in yellow, the 1913 course; and the 1933 course is shown on the base map. Also on this Plate 4 Dr. Fisk plotted a Course "A" which was his reconstruction of the course of the River around Diamond Island at an intermediate point between the mapped course of 1820-30 and the mapped course of 1882-3. This Course "A", in the opinion of Dr. Fisk, was the position of the River at the time of the formation of the chute cutoff.

On Plate 5 Dr. Fisk showed in red his opinion, based on maps and accretion scars, of the land which had accreted to what he designated as Bedford Bar in Louisiana between the time of the 1820 mapped course and the reconstructed Course "A". In yellow he mapped the land which, during the same period, had accreted to Diamond Point Bar in the State of Mississippi. This, in Dr. Fisk's opinion, shows the extent of the progression of Diamond Point Bar and shows its position at the time when its northwesterly progression was ended by the formation of the chute cutoff. Shown in green on this Chart 5 was Dr. Fisk's location of the thalweg in the reconstructed Course "A".

Plate 6 shows Dr. Fisk's opinion of the place where the chute cutoff developed and the situation at that time. The position of the Reconstructed Court "A" is shown in purple.

Plate 9 shows the mapped thalweg courses in 1913 and 1932-33 and Dr. Fisk's idea of the thalweg at the time of the Reconstructed Course "A". Shown is the position of the thalweg in each bend with hydrographic information as to the mapped courses.

Plate 10 shows the position of the thalweg of Course "A", shown in purple, when the entire low-water flow was around

to the north and west of Diamond Island and before the chute cutoff, and the thalweg of the 1882-3 mapped course, shown in green, when the entire low-water flow was through the chute cutoff. Also shown in light red is Dr. Fisk's reconstruction of the thalweg marked A_1 and shown in light brown the thalweg marked A_2. The map designations show A_1 to be "divided flow around Diamond Island" and A_2 "main water flow through cutoff."

On this Chart 10 Dr. Fisk placed the letter X on the thalweg A_1 as marking the point where the flow of the current of the river going around the island and through the cutoff was divided. He similarly placed a Y on the thalweg A_2 as marking this point of division, when most of the water was going through the cutoff chute.

On Plates 11 and 10a Dr. Fisk diagramed his opinion as to the location of accretions to Bedford Bar in Louisiana and to Diamond Island in Mississippi. He testified that all of the land mass forming Diamond Island and Diamond Island Towhead which lies west of the present location of the Mississippi River and north of the Oak Bend Reach of the River was eroded by the River subsequent to the formation of the chute cutoff with the exception of the remnant of Diamond Island. This was replaced, according to Dr. Fisk, by accretions formed to the right bank of the Mississippi as it migrated southwardly and westwardly from its position at the time of the formation of the chute cutoff.

The substance of his testimony was that in his opinion, based upon his experience, his examination on the ground, his study of accretion scars, maps, charts and aerial photographs, that all accretions lying to the right of a line drawn from the point Y on Plate 10 at right angles to the various thalwegs shown by the 1882-83, 1895, 1913 and 1932 mapped courses of the river were accretions to the Bedford Bar and therefore to Louisiana, and that all accretions to

the left of such line were accretions to Diamond Island and therefore to the State of Mississippi.

He also placed a designation of Point T at the westerly end of Diamond Island remnant from which a line drawn in a similar manner would show his opinion of the westerly terminus of the accretions to Mississippi.

Dr. Fisk stated that the Point Y was, in his opinion, the point of division of the thalwegs of the river after the formation of the chute cutoff and was the eastern end of a submerged bar attached to the island and extending eastwardly from it and which had caused the division of the thalwegs. This bar came above water as the main channel around to the north and west of the island died, as that channel was abandoned at low water by the River. Accretions were formed to this formerly submerged bar as well as to other portions of the island.

The second expert presented by the State of Mississippi was Mr. Austin B. Smith.

Mr. Smith is forty-nine years of age. He graduated from the University of Arkansas and is a registered civil engineer. He is at the present time the chief of the maintenance branch for the Mississippi River Commission and has been engaged for a total of twenty-five years with the Mississippi River Commission. For seven of those years he was with the Vicksburg District in the field on surveys and dredging on navigation and levee inspection. His initial assignment was on planning in connection with cutoffs and navigation on the lower Mississippi Valley division and its tributaries, remaining with that program until it was completed in 1942. During that period he saw sixteen cutoffs constructed and developed, and was then assigned to the stabilization program on the Mississippi River; working out the initial doctrine upon which that program was based. Since that

time he has been largely on navigation, on dredging, planning, and other related activities, including levee maintenance, and has been in charge since 1940 of those activities.

He served in the United States Army Corps of Engineers as a lieutenant colonel during the war.

In addition to his work with the Mississippi River Commission, since 1940 he has spent a large part of his time studying accretion problems in connection with the past actions and history of the Mississippi River and its relating effects upon erosion, formation of accretions, and changing of channels on the Mississippi River from Memphis, Tennessee, to the Natchez area and on the Arkansas River.

He is a member of a number of engineering societies, including the American Geophysical Union, the American Geographical Society, and the American Society of Civil Engineers.

He has been employed on several occasions to make investigations in connection with suits involving changes of the Mississippi River.

Mr. Smith testified that he had been commissioned by the State of Mississippi to make a study of the Diamond Island Towhead and Diamond Point area. That he began his study by examining certain ancient documents.

These included the 1826-27 land surveys on the Mississippi side of the River; Lloyd's 1862 Edition of Mississippi River Map showing navigation was at that time north of Diamond Island Towhead; U. S. Grant's Map of 1863 which showed no major changes; the 1864 Map of Admiral Porter, showing no major change; the 1866 Louisiana Levee Survey made by Captain J. A. Porter which showed for the first time a chute channel on the south side of Diamond Island. This map was of a controlled survey of the right bank of the river and showed navigation features. It was introduced

in evidence as Complainant's Exhibit No. 7a and 7b, and Louisiana Exhibit No. 19.

Mr. Smith then identified the 1875 Suter report and the supplement published in 1878 which were introduced as Complainant's Exhibits A and B to Smith's testimony. Mr. Smith testified that Major Suter's report was made for the specific purpose of improving navigation and detailed all the islands, the navigation sailing lines, the landings, the miles, sand bars, and other features important to navigation. Map No. 20 accompanying the Suter report was offered in evidence as Complainant's Exhibit No. 8.

Mr. Smith testified that he examined the 1875-85 Annual Report of the United States Lighthouse Board, which showed that the Diamond Island Light was established on March 16, 1877 on the chute channel.

As Exhibit 2 to Smith's testimony there was introduced Mississippi River Commission Chart No. 49, being the 1878-80 survey which showed the hydrography, the overbank elevations, the levees, the navigation lights, the landings, and other features. Mr. Smith testified that he also examined the bank line surveys of 1892, 1895, 1908-09, the 1913-15 Commission charts, the 1932 and 1937 New Orleans District Survey, and he superimposed these on Charts 51 and 52 of the Mississippi River Commission which was introduced as Exhibits 3-A and 3-B to Smith's testimony.

Mr. Smith testified that from his examination of these and other instruments he arrived at certain conclusions which were embodied in his report offered as Exhibit 9 to his testimony. These conclusions were:

(a) The navigation channel was to the north around Diamond Island Towhead until about 1874-75, when the river adopted the chute channel along the south side of Diamond Island Towhead.

(b) The northern boundary of Diamond Island Towhead is marked by the position of the dead thalweg in the abandoned channel and is depicted upon Complainant's Exhibit 2 to Smith's testimony.

(c) Underwater accretions are shown on Chart 49, Smith Exhibit 2, along the east end of Diamond Island Towhead.

(d) The Mississippi River gradually migrated southward and westwardly from its 1875-1881 position along the south side of Diamond Island Towhead. As a result, the Diamond Point area was eroded on the north and extended westward and southward by accretions.

(e) The Diamond Island Towhead area and contiguous lands forming the right bank of the Mississippi River were enlarged by accretions as the river so migrated as shown on Exhibits 3-A and 3-B.

(f) Four points were marked on Smith's Exhibit No. 2 as possible points of the division of the thalweg. Point A, in Mr. Smith's opinion, was the most likely location of the point of division. Point B was the alternate position and Points D and E were extreme positions which he did not think were reasonably defendable as being correct.

(g) In Mr. Smith's opinion, accretions formed to Diamond Island and to an extension from the nose of the island out to the point of division of the thalwegs. Most of this extension was underwater at the time of the 1878-1880 survey, but was built up by deposition after the water ceased to flow in the old channel around the island.

In support of its position the State of Louisiana presented as expert witnesses Mr. Clarence O. Durham, Jr. and Mr. Frank Welder.

Mr. Durham is thirty-three years of age. He is now an Assistant Professor of Geology at Louisiana State University at Baton Rouge, Louisiana. He holds a bachelor's degree in geology from the University of Texas in 1942. He

received a professional certificate in meteorology from the University of Chicago in 1943. In addition, he has done graduate work in geology at the University of Texas and at Columbia University. During World War II he was a weather forecaster for the Army Air Forces in the Caribbean and in South America. During the war period he received additional training in tropical meteorology at the University of Puerto Rico and was in charge of a research unit for training weather forecasters and had experience in interpreting aerial photographs and was awarded a rating of photo observer by the Air Force. He holds a commission as major in the Reserve Corps.

After the war he was a teaching Fellow at the University of Texas for one year and an instructor in geology for one year. For the past three years he has taught geology at Louisiana State University and has served as reserve geologist for the Bureau of Economic Geology at Austin, Texas. He has also taught geology field courses during the summer.

Mr. Frank Welder is thirty-one years old and lives in Baton Rouge, Louisiana. He graduated from the University of Texas with a degree of bachelor of science in geology in 1949. He obtained a master's degree in geology from Louisiana State University in 1951. He is now working for a doctor's degree in geology at Louisiana State University and expects to obtain such degree in June of 1955.

In connection with his work toward his doctor's degree, he has done research work since the summer of 1951 as a Research Assistant on a project for the Naval Reserve in the delta of the Mississippi River from New Orleans southward chiefly within the limits of Plaquemines Parish, and has been a teaching assistant at Louisiana State University for the past year.

Much of the testimony of these witnesses and the main basis of their conclusions concerning the action of the Mississippi River in the Diamond Island and Diamond Island Towhead area was based upon a theory developed by Mr. Welder concerning a pattern of the closing of channels which are being abandoned by the River.

While working in the delta of the Mississippi River from New Orleans southward in connection with the main thesis which he is to write before obtaining his Ph.D., Mr. Welder developed a theory that the River closes a channel that is being abandoned according to a definite pattern. This theory is summarized in Louisiana's brief as follows:

1. Development of a sand bar along the inside upstream bank of the channel being abandoned;

2. Development of a meander pattern of greater curvature within the closing channel;

3. Erosion and consequent retreat of the head of the opposite shore.

When Mr. Welder was employed to assist Mr. Durham in his investigation of the Diamond Island area, he explained to Mr. Durham the new theory of channel closing which he had developed. Mr. Durham apparently agreed with the new theory.

Although Mr. Welder testified that the conditions of soil, alignment of the river and speed of the current of the river in the Vicksburg vicinity are entirely different from those in the lower delta region, and further that there are no publications in the literature concerning the actions of the Mississippi River authenticating such a pattern of channel closing, this theory was adopted as the basis for the investigation of the areas in dispute.

Mr. Durham spent approximately five days over a period of several months in the Diamond Island vicinity and about seven days in the Diamond Point area making his investi-

gations, and Mr. Welder approximately the same length of time and made certain borings in the vicinity of the head of Diamond Island.

Mr. Durham and Mr. Welder prepared a series of charts which were introduced in evidence as Louisiana Exhibit No. 2. These charts, together with certain charts prepared by Mr. Welder in the course of his work in the lower delta area, demonstrate the new theory of channel closing.

As applied to the closing of the channel around to the north and west of Diamond Island, Mr. Durham testified that they demonstrate that a bar was formed from the right bank of the river upstream from the head of the old channel and connected to Bedford Bar located in Louisiana. That this bar advanced downstream and was the effective force which finally closed the channel. That in the meantime the head of Diamond Island and any underwater bar attached to that island to the point of division of the flow of the river was eroded back and destroyed by the river, all of which action was exactly what was to be expected under the new theory of channel closing.

During the course of the trial at Vicksburg, a set of maps and charts were introduced. Those maps and photographs concerned chute cutoffs at various points on the River. Mr. Durham apparently had never examined these charts prior to that time, but he felt that some of them supported his theory of channel closing. While admitting that he had never visited any of the locations and did not know whether the cutoffs were natural or artificial, he testified that the maps demonstrated the correctness of his theory of a definite pattern of channel closing. This portion of his testimony consumed many pages of the record and took up approximately the same amount of time as the testimony concerning Diamond Island area itself.

While Mr. Durham and Mr. Welder may be correct in their theory of channel closing, and I am sure they were

perfectly sincere in their testimony, I believe that the only thing proved by this evidence is that the method used by the Mississippi River in closing channels which it is abandoning is largely controlled by the soil, the alignment of the river, the speed of the current, and other factors present at the particular locality.

This is well demonstrated by one of the examples cited by Mr. Durham, Natchez Island. This is the closest chute to Diamond Island of any of the examples cited. In this case instead of the head of the island and the underwater bar attached thereto eroding and being destroyed, there was deposited on it sediment and accretions extending it upstream. No bar was formed to the inside upstream bank to cause a closing of the channel. Mr. Durham's testimony concerning Natchez Island appears in the record, Transcript pp. 971-979, and Mr. Smith also testified concerning it on Pages 1434-39, Transcript.

Applying his theory of a definite pattern of channel closing to the Diamond Island situation and demonstrating by numerous maps, charts, diagrams, and interpretations of aerial photographs, Mr. Durham testified that in his opinion the entire area embraced in the Diamond Island and Diamond Island Towhead, except the remnant island, is composed of accretions to Bedford Bar in Louisiana. He testified that in his opinion there were no accretions to Diamond Island proper and therefore none to the State of Mississippi.

In substance, his testimony is that a bar built out from Bedford Bar closing the channel around to the north and west of Diamond Island. That thereafter as the River migrated southwardly and westwardly it eroded all of this territory and replaced it with accretions formed by bars joined to Bedford Bar and running completely around Diamond Island to the east, south and southwest all the

way to Oak Bend on the south and Palmyra Lake to the west.

Mr. Welder loyally supported his colleague's testimony concerning the formation of the bars to Bedford Bar. However, he did not go all the way with him in discounting the possibility of there being some accretions to Diamond Island itself.

Referring to Plate 10-A of Exhibit 4 to the testimony of Dr. Fisk, Mr. Welder testified:

> "If you can remember now the small strip which was all that remained of the original point, it is, in my mind, rather difficult to consider that all the area in blue was formed by accretion to that small strip of land. It might have happened, but I do not think so. As I have said, the bars trend to the northwest and the west in the vicinity of Diamond Island Towhead on Plate 10-A. None of these bars is attached to the south side of Diamond Island. The bar immediately south of Diamond Island, as you have seen on the survey by the Louisiana Department of Public Works, is attached to the right, what had been the right bank, of the Mississippi River, a short distance east of Diamond Island. Now I can't deny that sediment has been deposited all around Diamond Island. It's obvious that it has, but—well, that is my geological interpretation of it."

Both Mr. Durham and Mr. Welder disclaimed any knowledge as to navigation. They did not connect a thalweg in any way with navigation. In their viewpoint, every stream, large or small, has a thalweg so long as at any stage of the river there is a current running.

Dr. Durham, as appears from his testimony on Pages 1255 to 1266, admitted that there could be deposition to

the underwater bar which would bring it above water. His idea was that this would not occur until the thalweg of the closing channel, north of the underwater bar, had in his words "passed over the bar." That all accretions were then to the right bank of the river which, in his opinion, would be accretions to Louisiana.

In this Mr. Durham seems to ignore the fact that the chute channel was entirely within the State of Mississippi and that for the entire length of Diamond Island, including any bar attached to the head of the island, the right bank of the river was Mississippi territory. In addition, as I envision the situation, the thalweg in the closing channel, north of the submerged bar, did not cross over anything. As the channel closed and no water flowed north of the formerly submerged bar that thalweg simply ceased to exist. The only thalweg left was through the chute channel. As this role remaining thalweg migrated south and west it eroded the left bank of the chute channel and accretions formed to the right bank, including the formerly submerged bar.

This is the situation testified to by Dr. Fisk and by Mr. Austin Smith.

As stated by Chief Justice Taft in his decision in the case of *State of North Dakota v. State of Minnesota*, 263 U.S. 365, 44 S. Ct. 138, 68 L. Ed 342:

> "It is difficult for a court to decide issues of fact upon which experts equal in number and standing differ flatly, and when their conclusions rest on estimates upon the correctness of which the court, without technical knowledge, cannot undertake to pass. In such cases, the court looks about for outstanding facts from which the lay mind can safely draw inferences as to the probabilities. The court is also aided by its judgment of the care and accuracy with which the con-

trasted experts respectively have determined the data upon which they base their conclusions. . . ."

While I have great respect for the ability and the sincerity of the experts presented by Louisiana, I cannot agree with them that no part of the very large mass of accretions in this area were formed to Mississippi territory. These gentlemen were intelligent, articulate, enthusiastic, and undoubtedly most sincere. However, they were comparatively inexperienced concerning the actions of the Mississippi River and I cannot help but feel that they were rather carried away with their enthusiasm for the newly developed theory as to channel closing when they reached the conclusion that none of the accretions were formed to Mississippi territory.

While stoutly backing up the testimony of its expert witnesses, the attorneys for Louisiana offer an alternative argument. Under this argument, it is admitted that there were some accretions to Diamond Island. Louisiana Exhibit 43 Plate 2 is a map prepared by engineers for Louisiana and suggesting that the accretions shown in orange on this map were accretions to Mississippi territory and the remaining territory shown on this map were accretions to Louisiana territory. The lines are shown at right angles to the low water banks of the various charted courses beginning at a point on the 1882-3 chart just below the head of Diamond Island remnant on the right and at a point marked C on the left at the westerly extremity of the remnant.

Concerning this alternative argument, it is stated in the brief for Louisiana, beginning on Page 29, as follows:

"Louisiana, under the alternative that the court might hold that these bars, or some of them, were accretions, not only to Louisiana where they were attached,

but also were to the island when south of it, then makes the following argument, viz.: It appears that both states are content to urge the same legal principle as to division of accretions (provided there were accretions actually formed to the island remnant itself).

"This legal principle is that accretions should be divided at right angles to the new bank of the river in front of each successive bar. Mississippi says to the thalweg of the new river, but this is of no real importance.

"Louisiana then contends, that the entrance to the channel around the island as the water last ceased to flow therein, *as the same has been surveyed and hereinabove discussed;* would then be the boundary between the two states at that point, and that any accretions to the two states in the area of that boundary, would be divided on this right angle principle. The same argument would apply to the channel at the western end of the island, which can readily be located and surveyed.

"How this division could be made is graphically shown on Louisiana exhibit No. 43, Plate 2. Such division lines are capable of being mapped and surveyed on the ground.

"We submit then, that such is a proper division of accretions, in the event it is held that any of these accretions formed to the island."

My conclusion that some part of these accretions were formed to Mississippi territory and some part to Louisiana territory is based not only upon the testimony of the very able and experienced experts presented by Mississippi but is buttressed by the testimony of Captain Wm. H. Read, 82 years old, a former steamboat captain who had lived all of his life in the neighborhood. He had sailed boats on

the Mississippi in the neighborhood of Diamond Island and Diamond Point for many years since the early 1890's. He had been in charge of cruising timber on the accretions; of making surveys and making lines and of acting as manager for persons claiming to own the land. He testified, on Page 472 of the Record, that he had seen the accretions, over the years, formed to the remnant of Diamond Island in a southerly and easterly direction. He further testified, beginning on Page 48 of the transcript, as follows:

"Q. Where is that gravel pit, with reference to the head of the island in the location of Diamond Benchmark?

"A. Just to the east of the head of the island and on the head of the island—not on the main shore but under the shelving bank.

"Q. Under the shelving bank?

"A. Yes, sir.

"Q. How far, to your personal observation, have you seen that gravel bar extending east of there?

"A. On up to the white line; on up into the Bedford property.

"Q. A gravel deposit, is that right, sir?

"A. Yes, sir.

"Q. What size gravel is it?

"A. Just ordinary rocks; not very large; medium sized rocks; about hen egg would be about the largest.

"Q. Ordinary river run gravel, is that right or not?

"A. Well, I don't know what we'd call river run gravel.

"Q. I am trying to get at some term.

"A. It's about the usual size of gravel that deposits on mostly islands, especially on the head of them.

"Q. Have you seen that formation at the heads of

other islands or heads of other towheads where you have a divided flow of water going on either side of the island or towhead, Captain?

"A. Yes, sir, we have a splendid case of that right here, almost inside of Vicksburg, Race Track Island. The river went both ways there and finally went through the chute and left the old channel and on the head of that island and upstream it built sand and gravel.

"Q. Between the divided channels or flow of the river?

"A. Where the channel divided, the island built upstream.

"Q. Is it usual or unusual, where you have a divided channel and island or cutoff towhead, for that formation that is between the two divided channels to build accretions, gravels and sand and other accretions, to build upstream?

"A. Usually.

"Q. It is usual?

"A. Very unusual to do otherwise.

"Q. It is unusual to do otherwise?

"A. Yes, sir. Now, we have another case down there at Ursina where there was a towhead made on Big Black Bar River; it went both ways and the accretions built on upstream with sand and gravel and both these cases I mentioned, Vicksburg people have dug gravel off them towheads."

Others, including Mr. Spencer, a lawyer living in Tallulah, Louisiana, who was formerly the owner of certain of the accretions in the Diamond Island area, and L. C. Dunmore, who had lived on a part of this land for many years, testified that part of the accretions were known in the community as being in Louisiana and part in Mississippi.

Many deeds were made conveying portions of this property as being in Mississippi and others in Louisiana. Parts of it were assessed for many years for taxes in Mississippi and parts in Louisiana.

A number of law suits were filed and decrees rendered on the theory that part of the accretions were located in the State of Mississippi. The Supreme Court of Mississippi in the case referred to *Sharp & Stricker* v. *Learned*, 32 So. 2d 141, held that a large part of the accretions were located in the State of Mississippi. While none of this testimony is conclusive of the location of the state boundary line and is not binding upon the State of Louisiana, it is persuasive, when taken in connection with the expert testimony, that a part of the accretions were located in each State.

I therefore find that a part of the accretions in the Diamond Island area are in Louisiana and part in Mississippi, and that the boundary between the States should be fixed on a line drawn at right angles to the thalwegs of the charted courses beginning at the point where the current of the River was divided at the time the current ceased to flow in the channel around to the north and west of Diamond Island at low water and the water in such channel became stagnant.

The most difficult question to be determined in this case, to my mind, is the location of the division point of the thalwegs at the time the chute was formed. Dr. Fisk fixes the most likely point at the location of Point Y marked on Plate 10 of Exhibit 4 to his testimony. He fixes an alternate point marked by the letter X on this same Plate 10.

Mr. Austin B. Smith testified that in his opinion the point should be fixed at the place marked A on Exhibit 5 to his testimony, but also located other possible points marked by the letters B, D, and E.

Louisiana has suggested if it is determined that part of

the accretions were to Mississippi and part to Louisiana, that the point to begin the division of the accretions should be located at a point near the head of the island as marked on Louisiana Exhibit No. 43, Plate 2.

Major Charles R. Suter made a reconnaissance survey of the river in 1874 pursuant to an Act of Congress approved June 23, 1874, Chapter 457, 18 Statutes at Large 237, 242, providing for the improvement of certain transportation routes to the seaboard. Major Suter was assigned to make an examination of the Mississippi River from Cairo to the Gulf. His party had a government steamboat and, in performance of the work, passed over the river in this vicinity twice. The courses of the channel were taken by compass. Distances were determined by the speed of the boat. Widths of the river were estimated, and to some extent these estimates were checked by triangulation.

The purpose was to ascertain the appearance of the river and to get a general idea of the shape and location of the channel. No survey by actual measurements was made and accuracy was not attained.

His report was published in Part II of the 1875 Annual Report and a supplementary section was published in Part II of the 1878 Annual Report of the Chief of Engineers. Copies of the reports were introduced in evidence as Exhibits A and B to Smith's testimony.

On Page 548 of the 1875 Annual Report Major Suter states:

> "The effect of very extensive bank-abrasion was well shown last summer, in the harbor of Vicksburg, Miss. After the subsidence of the great flood of 1874, the shore of the [illegible] opposite Vicksburg caved in to an enormous extent. The sand thus precipitated into the river was washed down into the bend below, and the crossing from Vicksburg to delta, which usually is over

20 feet deep, was shoaled to 8 feet. It is supposed that the next high water will remove this shoal, and it is only mentioned to show what very extensive and far-reaching effects may be produced by causes which at first sight may appear to be purely local. At the same time the bend of Diamond Island, sixteen miles below Vicksburg, filled up, and the channel established itself permanently in the chute. This change was also probably due to the excessive bank erosion at Vicksburg."

The report of Major Suter was accompanied by the Suter charts. Map 20 shows the situation at Diamond Island as found by him in 1874. Several copies were introduced, one being Complainant's Exhibit No. 8. It shows the chute cutoff and locates the point of division of the thalwegs going around the Island and through the chute cutoff.

The point which Major Suter showed on his Map No. 20 as the point where the thalwegs divided has been placed by Mr. Smith on Exhibit 5 to his testimony marked by the letter S.

The burden of proof as to the boundary is on the State of Mississippi as the complainant. The measure of proof, however, is as stated by this Court in the case of *Arkansas v. Tennessee*, 269 U. S. 152, 46 S. Ct. 31, 70 L. Ed. 206, "such certainty as is reasonable as a practical matter, having regard to the circumstances." The Suter report and maps are discussed in this opinion. This burden, in my opinion, has been met. Major Suter's report may be said to be the only testimony by an eye-witness. He was on a mission for the Government in connection with navigation. He was on the ground and certainly had the opportunity to know the exact spot where the current divided, and the location of the place where the currents were flowing was one of the main objects of his visit to this vicinity. He stated that the old channel was filled at that time. I do not believe that the

head of the submerged bar, connected with the island and which was the cause of the division of the current, was eroded back after that time. I therefore find that the Point S as shown on Exhibit 5 to Smith's testimony is the point to begin the division of the accretions.

I do not believe that further discussion of the evidence in this report will serve any good purpose and I will therefore summarize my findings of fact concerning Part A below.

During the hearing at Vicksburg ruling on certain objections to certain testimony was reserved. All of these objections are overruled (except as limited at the time the objection was made) with the exception of objections to the testimony of Dr. Fisk in a previous case. These objections are sustained and the testimony has not been considered.

Claims to Diamond Island and Towhead by Prescription and Acquiescence

In its answer to the [redacted] complaint Louisiana asserted title to the lands lying [redacted] Diamond Island and Diamond Island Towhead area by prescription and acquiescence on the part of Mississippi to the claim of Louisiana and that Mississippi is therefore estopped from asserting any claims to said land.

Mississippi in a reply to the answer filed by Louisiana denied that Louisiana had acquired title to the lands by prescription and that Mississippi had acquiesced in such claims by Louisiana, and further averred that for more than 50 years Mississippi had asserted ownership over such lands and had acquired title thereto by prescription and acquiescence by Louisiana.

In my opinion, the evidence falls far short of that degree of proof necessary to show that either State has acquired title to the lands by prescription or that either State has acquiesced in the claim of the other.

Many deeds to portions of the land were introduced into evidence, some describing the land as situated in Mississippi and others as situated in Louisiana. Records were introduced showing that portions of the land were assessed for taxes in Louisiana and others in Mississippi. In instances the same persons assessed the land in both States. Evidence from persons claiming to own the land was to the effect that they bought titles from persons claiming under Louisiana and to the same land from other persons claiming titles under Mississippi because no one knew in which State the land was situated. Hotly contested law suits were filed in both States claiming the land to be situated in one state or the other.

The evidence shows and I so find that possession was "scrambled" and that neither State has acquiesced in the claim of the other.

Summary of Findings of Fact as to Diamond Island

1. A point bar (Diamond Island Point Bar) was formed and built by erosion of the territory of Louisiana on the right bank of the Mississippi River and by accretion to the mainland of Warren County, Mississippi, in a northerly and westerly direction, over a long period of years. As the point bar thus moved the thalweg or main navigable channel of the River, forming the boundary between Louisiana and Mississippi, also moved in a northerly and westerly direction until it reached a position about 1864 around to the north and west of what is now called Diamond Island.

2. Sometime between the year 1864 and the year 1866 the River by an avulsion during a period of high water cut across the point bar and formed a chute cutoff, leaving the northwest end of the point bar an island, thereafter known as Diamond Island, but with the main channel of the River still flowing around the island to the north and west thereof.

3. After the chute cutoff was formed it developed and widened until the major portion of the flow of the River was diverted into it and the former main channel around the island ceased to be navigable and was filled by deposition of gravel, sands, clays, silt and other materials. The current ceased to flow in this channel and the water became stagnant except in periods of high water by at least the period 1878-80.

4. The hydrographic survey of the Mississippi River of the date 1882 shows the channel around Diamond Island to be closed and to be filled to an elevation of 15 to 20 feet above mean low water. Charts 49 and 50, Complainant's Exhibit 10; Smith's testimony, Tr. pp. 707-717; and Fisk's testimony, Tr. p. 95.

5. The flow of the River was divided when the chute channel was formed and one branch of the thalweg continued in the channel around the island until that channel was filled and abandoned. The other branch of the channel was diverted into the chute cutoff and became the sole thalweg of the River when the old channel was abandoned. The division of the flow was caused by a submerged bar attached to the head of the island and extended upstream into the River to the point of the divided thalweg. This point of division is shown on Map 20 of Major Suter and is fixed as Point S on Exhibit 5 to Austin B. Smith's testimony.

6. When the old channel was abandoned the submerged bar came above water by deposition deposited upon it and formed a part of Diamond Island from the head of that island to the point of division of the current represented by Point S as marked on Exhibit 5 to the testimony of Austin B. Smith. This bar of gravel, sands and other material was attached to the part of the upper end of said Diamond Island Towhead between the original main channel of the Mississippi River and the main channel of the chute

cutoff course and evidence of this point of diversion is yet in existence by the deposition of gravel shown on temporary charts of the United States Engineers and of the Mississippi River Commission, observation of witnesses, photographs and borings, and is evident from an inspection of the premises; and since said gravel deposit is yet in existence, it is found that same was never eroded, washed away or destroyed. See Chart 49, Mississippi River Commission, 1882, Complainant's Map Exhibit 10; Report of Dr. H. N. Fisk and photographs therein contained, Complainant's Fisk Exhibit No. 4; Testimony of Dr. H. N. Fisk, Tr. 77-82, 164, 167, 182, 190, 297; Testimony of Captain William H. Reed, Tr. 483-485, 516-517; Testimony of Austin B. Smith, Tr. 865-868, 873, and Complainant's Smith Exhibit No. 10; the Suter Map No. 20, Complainant's Exhibit No. 8, and interpretation thereof, testimony of Mr. Smith, Tr. 876-877; Testimony of Mr. Clarence O. Durham, Jr., Tr. 948-959, 971, et seq. 1142, 1239, et seq.; Testimony of Mr. Frank Welder, Tr. 1323, 1328, 1349, et seq.

7. The boundary between the States of Louisiana and Mississippi in the old channel was not changed by the avulsion and was fixed from Point S around the Island to the north and west at the position of the thalweg in that channel when the current ceased to flow therein and the water became stagnant by at least the period 1878-80.

8. As Diamond Island Point Bar, subsequent to the occurrence of the avulsion and chute cutoff, continued to build downstream and westwardly by the gradual process of erosion and accretions, the flow of the waters through the chute cutoff eroded, caved in and washed away portions of the southerly side of Diamond Island Towhead, particularly off of the southwest end of same. While erosion was occurring by impingement of the current against Diamond

Island Towhead at the westerly end thereof at the same time erosion was taking away portions of the Louisiana mainland to the west and southwest of the westerly end of Diamond Island Towhead. The maximum extent of this erosion of the west end of the Island is at that point in the thalweg of the original old and abandoned channel of the Mississippi River around Diamond Island Towhead (situated between Diamond Island Towhead and the Louisiana mainland at the west end of Diamond Island Towhead) which has been denoted as Point C at the westerly end of Diamond Island Towhead on Complainant's Exhibit 5 to the testimony of Mr. Austin B. Smith.

9. In accordance with the legal principle concerning division of accretions urged by both the State of Mississippi and the State of Louisiana, I find that the boundary between the two States in the Diamond Island-Diamond Island Towhead area on the east should be fixed by beginning at the Point S as located on Exhibit 5 to the testimony of Austin B. Smith and extending across the accretions at right angles to the successive thalwegs along the line from Point S to Point S_1, Point S_2, Point S_3, Point S_4 to Point S_5; all as shown on said Exhibit 5 to the testimony of Austin B. Smith, and on the west should be extended across the accretions beginning at the Point C and along the line to Point C_1, Point C_2 and Point C_3, as shown on said Exhibit 5 to the testimony of Austin B. Smith. The points, according to the testimony, can be easily located upon the ground and an accurate description prepared by Mr. Austin B. Smith, a competent engineer, is set forth below in this report.

10. I do not find that there is sufficient evidence to show that either the State of Louisiana or the State of Mississippi has acquired title to the Diamond Island-Diamond Island Towhead area by prescription and acquiescence of the other State.

Part B

Diamond Point

The State of Louisiana by direct authority of its Attorney General entered into the record a stipulation which reads as follows:

> "Pursuant to authority of letter from Hon. Fred S. LeBlanc, Attorney General of the State of Louisiana, dated July 2, 1954, copy of which is annexed hereto, the State of Louisiana by E. H. Lancaster and Ashton L. Stewart, Special Assistant Attorneys General, admits the area known as Diamond Point is not located within the State of Louisiana and Louisiana does not deny that this area is located in the State of Mississippi." (Tr. p. 8)

This was in addition to the stipulation discussed under Part A concerning the formation of Diamond Point Bar and development of the chute cutoff.

While the stipulation does not contain any specific description of the land known as Diamond Point thus disclaimed by the State of Louisiana, it was made clear by the evidence and by the arguments and briefs of her attorneys that the only portions of the Diamond Point area to which Louisiana makes any claim are:

> (a) An island which formed near the southern boundary of Diamond Point in what is referred to in the testimony as the Kellogg Lake channel of the River;
>
> (b) A strip of territory along the northern boundary of Diamond Point in the Oak Bend channel at a point where Louisiana asserts that the River had migrated southwardly approximately ¼ of a mile after the current ceased to flow through this channel at low water during the year 1940.

In addition to the stipulations, the evidence is clear and without contradiction that all of the land in the Diamond Point area except that part listed above under (a) and (b) is situated in the State of Mississippi, and I so find.

Diamond Point Bar was formed, as discussed under Part A of this report, by accretions to the mainland of Mississippi in Warren County, Mississippi. After the chute cutoff developed cutting off the northwestern end of the Bar, the Mississippi River continued to erode the Louisiana shore opposite the westerly and southerly side of Diamond Point until in 1904 it caved into an old channel known as Palmyra Lake left by Davis Island cutoff of 1867. This caving of Louisiana shore into Palmyra Lake is often referred to as Killakranka Cutoff.

After this break-through, the flow of the Mississippi River was divided and a part thereafter went downstream through Palmyra Lake to the west and south of Davis Island situated in Mississippi (but not involved in this case). Part continued to flow eastwardly in the channel along the southerly side of Diamond Point. This eastwardly flowing reach of the Mississippi River is sometimes known as Kellogg Lake. As a result of the reduced flow, the Kellogg Lake channel gradually filled and was in the process of closing and being abandoned as a channel of navigation at the time of the construction of Diamond Cutoff across the base of Diamond Point in 1933.

In 1933 the United States Corps of Engineers, acting under the direction of the Mississippi River Commission, completed an artificial cutoff for the improvement of navigation across the face of Diamond Point, which cutoff is known as Diamond Cutoff. In the course of the construction of this artificial cutoff large quantities of dredged material were pumped into the bed of the River channel on the south side of Diamond Point, near the lower end of Diamond

Cutoff. After completion of the cutoff a fill was placed across the old Kellogg Lake channel thereby finally closing it.

The southern boundary of Diamond Point in Mississippi and the northern boundary of Sargent Point in Madison Parish, Louisiana was the middle of the thalweg in the Kellogg Lake reach of the River. The construction of the Diamond cutoff, being an artificial avulsion, did not alter or change the boundary between the two states, and said boundary became fixed when the current ceased to flow and the water became stagnant in the Kellogg Lake reach of the Mississippi River.

As to the disputed territory listed under (a) above, the evidence was as follows:

As stated, the Kellogg Lake channel of the River which forms the southern boundary of Diamond Point started to deteriorate and the flow to slacken after the formation of Killakranka Cutoff prior to 1913, As a result, some islands were formed in this channel of the River.

The 1913 Chart; Louisiana Exhibit 27, did not show the existence of the island in dispute nor did it appear on the chart for 1920, Louisiana Exhibit 28. It did appear for the first time on the 1925 Map (Louisiana Exhibits No. 26 and 26-A). At that time it is shown to be north of the main thalweg of the Mississippi River and therefore on the Mississippi side of the main thalweg. It is shown at that time to be separated from the mainland of Mississippi by a channel containing a lesser flow than the channel to the south of the island. By 1930 the island was attached by accretions to the left bank or Mississippi side of the River. Mr. Durham, a witness for Louisiana, described the formation of the island from the various maps and charts. There were no eye-witnesses to testify in reference to the island. Mr. Durham's testimony shows that from the only available

maps and hydrographic surveys the island is shown to be north of the main thalweg of the River.

Dr. H. N. Fisk testified that he made a detailed study of this area and that in his opinion the island was formed north of the thalweg of the River.

This being the only evidence concerning the formation and location of the island and all of the maps and charts showing the island to lie north of the thalweg of the River and on the Mississippi side of the River, I find that the island is located within the territory of Mississippi and that the boundary between the States should be drawn south of the island at the location of the thalweg when the current ceased to flow in this channel and the water became stagnant as a result of the abandonment of the channel by the River.

As to the territory in dispute under the designation (b) above, the evidence shows:

The artificial cutoff called Diamond Cutoff was constructed by the U. S. Engineers in 1932-33 beginning at approximately the location of the Oak Bend channel of the River, which was the then northern boundary of Diamond Point and the southern boundary of the Diamond Island-Diamond Island Towhead area.

Diamond Cutoff widened and deepened and by 1935 a large portion of the flow of the River was through the cutoff. Navigation ceased to be directed through the Oak Bend channel by 1936 and navigation lights and bouys were removed. In 1939 and again in 1940 no water flowed through the Oak Bend channel at low water and the entire low-water flow was through the cutoff.

At times of high water there was a flow of water in Oak Bend and may be at this time. When I visited the Oak Bend region in July, 1954, the bank was some 20 feet above

the water in the river. There was a large expanse of sand in the old channel containing some vegetation. There was no water, except in certain low places where there was some stagnant water.

At that time the river going through the cutoff was deep, the current swift, and large boats carrying commerce were moving on the river.

It is my opinion, as stated in Conclusions of Law Number 5, that the boundary became fixed in the middle of the thalweg of this channel as a result of the artificial avulsion caused by Diamond Cutoff when current ceased to flow in the Oak Bend channel by at least 1940. Navigation could not use the channel at that time, the water was stagnant in the old channel except in times of high water. It was no longer a part of the main river which continued to flow at all stages with a swift current through the cutoff carrying the commerce of the river.

While it is true that there has been some erosion by high water flow in the channel since 1940 to the extent of probably ⅓ of a mile, I do not think that this has caused any change in the State boundary but is merely an effect of the avulsion.

Prescription

In view of the above findings, I do not think it is necessary to discuss in detail the evidence as to the claim of Mississippi to title by prescription and acquiescence in such claim by Louisiana. Suffice it to say that from the uncontradicted evidence I find that the State of Mississippi at all times for more than fifty years exercised jurisdiction and sovereignty over the body of land known as Diamond Point. This record discloses no assertion by the State of Louisiana, prior to the institution of this suit, of any claim to such land.

Summary of Findings of Fact as to Diamond Point

1. I find, based upon the admissions of the State of Louisiana and upon the evidence, that Diamond Point is located in the State of Mississippi, and that the correct boundary between the States of Mississippi and Louisiana in the Diamond Point area is as described in the next part of this report.

2. I find that under the doctrine of prescription the State of Mississippi has acquired title to the area known as Diamond Point and that its claim thereto has been acquiesced in by the State of Louisiana over a long period of time.

V

State Boundary

On the basis of all of the foregoing, the state boundaries involved in this suit are found and concluded to be as follows:

Description by geodetic positions (North American Datum) of the line that forms the Mississippi-Louisiana state boundary between Latitude 32° 15′ and 32° 09′ and Longitude 90° 58′ to 91° 07′, that is, in the area commonly known as Reed Bedford, Oak Bend, Diamond Island and Diamond Point,

Beginning at a point where the live thalweg of the Mississippi River crosses the line 32° 15′ North Latitude;

Thence Southward along the live thalweg of the Mississippi River to a point where the live thalweg crosses the line that runs South 60° East from the point that is at Lat. 32° 11′ 34″—Long. 90° 59′ 47″.

Thence leaving the thalweg of the Mississippi River and running North 60° West to the point being at Lat. 32° 11′ 34″—Long. 90° 59′ 47″;

Thence running westward along the dead thalweg of the abandoned channel of the Mississippi River (lower Oak Bend) to a point that is at Lat. 32° 11′ 29″—Long. 91° 00′ (S-5 Smith Exhibit 5).

Thence leaving the dead thalweg of the abandoned channel of lower Oak Bend and running Northward (along the Suter line, Smith Exhibit 5) to a point that is at Lat. 32° 11′ 46″—Long. 91° 00′ 09″ (S-4, Smith Exhibit 5);

Thence Northward to a point that is at Lat. 32° 11′ 51″—Long. 91° 00′ 11″ (S-3, Smith Exhibit 5);

Thence Northward to a point that is at Lat. 32° 12′ 44″—Long. 91° 00′ 20″ (S-2, Smith Exhibit 5);

Thence Northward to a point that is at Lat. 32° 13′ 09″—Long. 91° 00′ 14″ (S-1, Smith Exhibit 5);

Thence Northward to a point that is at Lat. 32° 13′ 21″—Long. 91° 00′ 10″ (S_2 Smith Exhibit 5).

Thence running westward along the dead thalweg of the abandoned channel of the Mississippi River that loops around the Northern side of Diamond Island (Diamond Island Towhead) to a point that is at Lat. 32° 13′ 22″—Long. 91° 00′ 13″;

Thence Westward to a point that is at Lat. 32° 13′ 26″—Long. 91° 00′ 22″;

Thence Westward to a point that is at Lat. 32° 13′ 31″—Long. 91° 00′ 30″;

Thence Westward to a point that is at Lat. 32° 13′ 36″—Long. 91° 00′ 37″;

Thence Westward to a point that is at Lat. 32° 13′ 44″—Long. 91° 00′ 47″;

Thence Westward to a point that is at Lat. 32° 13′ 49″—Long. 91° 00′ 53″;

Thence Westward to a point that is at Lat. 32° 13′ 55″—Long. 91° 01′;

Thence Westward to a point that is at Lat. 32° 14'— Long. 91° 01' 05";

Thence Westward to a point that is at Lat. 32° 14' 09"— Long. 91° 01' 15";

Thence Westward to a point that is at Lat. 32° 14' 17"— Long. 91° 01' 29";

Thence Westward to a point that is at Lat. 32° 14' 23"— Long. 91° 01' 43";

Thence Westward to a point that is at Lat. 32° 14' 29"— Long. 91° 02";

Thence Westward to a point that is at Lat. 32° 14' 32"— Long. 91° 02' 16";

Thence Southward to a point that is at Lat. 32° 14' 31"— Long. 91° 02' 33";

Thence Southward to a point that is at Lat. 32° 14' 26"— Long. 91° 02' 48";

Thence Southward to a point that is at Lat. 32° 14' 16"— Long. 91° 03';

Thence Southward to a point that is at Lat. 32° 14' 00"— Long. 91° 03' 06";

Thence Southward to a point that is at Lat. 32° 13' 54"— Long. 91° 03' 08" ("C" Smith Exhibit 5).

Thence running southward (along Smith line "C" Exhibit 5) to the point that is Lat. 32° 13' 41"—Long. 91° 03' 10" (C-1 Smith Exhibit 5);

Thence Southward to the point that is at Lat. 32° 13' 31" —Long. 97° 03' 16" (C-2 Smith Exhibit 5);

Thence Southward to the point that is at Lat. 32° 13' 07" —Long. 91° 03' 40" (C-3 Smith Exhibit 5).

Thence running westwardly along the dead thalweg of the abandoned channel of the Mississippi River (lower Oak Bend) to the point that is at Lat. 32° 13' 23"—Long. 91° 04';

Thence Westwardly to a point, Lat. 32° 13' 37"—Long. 91° 04' 30";

Thence Westwardly to a point, Lat. 32° 13′ 35″—Long. 91° 05′;

Thence Westwardly to a point, Lat. 32° 13′ 26″—Long. 91° 05′ 30″;

Thence Westwardly to a point Lat. 32° 13′ 04″—Long. 91° 06′;

Thence Westwardly to a point, Lat. 32° 12′ 30″—Long. 91° 06′ 28″;

Thence Westwardly to a point at the head of Palmyra Lake and Kellogg Lake (where the Northern and Western boundary of Diamond Point ends and which is point of beginning of the Southern boundary of Diamond Point), Lat. 32° 12′ 24″—Long. 91° 06′ 44″;

Thence Westwardly along the thalweg of Palmyra Lake to a point, Lat. 32° 12′ 26″—Long. 91° 07′.

That portion of the Southern boundary of Diamond Point that also forms the Mississippi-Louisiana state boundary is described as follows:

Beginning at the thalweg of the Mississippi River at the lower end of Diamond Point Cut-off at a point, being at Lat. 32° 09′ 46″—Long. 91° 00′ (Smith Exhibit 5);

Thence Westwardly along the dead thalweg of the abandoned channel of the Mississippi River and so-called Kellogg Lake to a point, Lat. 32° 09′ 43″—Long. 91° 00′ 30″;

Thence Westwardly to a point, Lat. 32° 09′ 40″—Long. 91° 01′;

Thence Westwardly to a point, Lat. 32° 09′ 45″—Long. 91° 01′ 30″;

Thence Westwardly to a point, Lat. 32° 10′—Long. 91° 01′ 52″;

Thence Westwardly to a point, Lat. 32° 10′ 07″—Long. 91° 02′;

Thence Westwardly to a point, Lat. 32° 10′ 27″—Long. 91° 02′ 29″;

Thence Westwardly to a point, Lat. 32° 10′ 41″—Long. 91° 03′;

Thence Westwardly to a point, Lat. 32° 10′ 50″—Long. 91° 03′ 30″.

The following portion of this description is inserted here to complete the Southern boundary of Diamond Point and to join the two portions of the Mississippi-Louisiana state boundary:

Thence continuing Westwardly along the dead thalweg in the abandoned channel of the Mississippi River and so-called Kellogg Lake to a point, Lat. 32° 10′ 54″—Long. 91° 04′;

Thence Westwardly to a point, Lat. 32° 11′—Long. 91° 04′ 18″;

Thence Westwardly to a point, Lat. 32° 11′ 03″—Long. 91° 04′ 30″;

Thence Westwardly to a point, Lat. 32° 11′ 11″—Long. 91° 05′;

Thence Westwardly to a point, Lat. 32° 11′ 25″—Long. 91° 05′ 30″;

Thence Westwardly to a point, Lat. 32° 11′ 44″—Long. 91° 06′;

Thence Westwardly to a point, Lat. 32° 12′—Long. 91° 06′ 10″;

Thence Westwardly to a point, Lat. 32° 12′ 07″—Long. 91° 06′ 15″;

Thence Westwardly to a point, Lat. 32° 12′ 20″—Long. 91° 06′ 30″;

Thence Westwardly to a point, Lat. 32° 12′ 24″—Long. 91° 06′ 44″ (being the point at the head of Palmyra Lake and Kellogg Lake where the Northern and Western

boundary of Diamond Point ends and joins with the Southern boundary of Diamond Point).

VI.

Recommendations for a Decree

I recommend the following decree:

1. That it be decreed that the true boundary between the States of Mississippi and Louisiana at the places involved in this case be determined to be as set forth under Part V of this report.

2. That the costs of this suit be equally divided between the two States.

Respectfully submitted,

D. K. M. KAMY,
Special Master.